THE INTRODUCTION OF UNLEADED PETROL: IMPLEMENTATION OF EC DIRECTIVE 85/210/EEC

DISCUSSION PAPER BY THE DEPARTMENT OF THE ENVIRONMENT

1. The purpose of this paper is to seek the views of industry, motoring organisations and other interested bodies on possible measures to implement Directive 85/210/EEC on the introduction of unleaded petrol which was agreed by the Council of Ministers in March 1985. We would be very grateful if answers to the questions in the paper, together with any other comments, could be sent no later than 13 December 1985 to:

Department of the Environment
Room A302
Romney House
43 Marsham Street
LONDON SW1P 3PY

2. A copy of the directive is attached. Of particular importance for the purpose of measures necessary to implement it are Article 2.3, which requires Member States to reduce the lead content of leaded petrol to 0.15 grams per litre as soon as they consider it appropriate; Article 3, which requires Member States "to ensure the availability and balanced distribution within their territories of unleaded petrol from 1 October 1989"; Article 7, under which Member States "shall not prevent or restrict, on grounds of lead or benzene content the free circulation and marketing of petrol which complies with this Directive." Article 13, requires Member States to "take appropriate measures to ensure as far as possible that leaded petrol is not used in motor vehicles designed to run on unleaded petrol"; and Article 14 invites them to "promote the widest possible use of unleaded petrol in all existing vehicles capable of running on such fuel".

3. The Government decided in 1981 that the lead content of leaded petrol should be reduced from 0.4 to 0.15 grams per litre from 31 December 1985 - a reduction of 60% in lead emissions from car exhausts (Article 2.3). Following consultation, a Regulation will shortly be made, and laid before Parliament, which will have the effect of permitting the sale of unleaded petrol, conforming to a new British Standard, in this country from 1 January 1986 - thereby meeting the requirement under Article 7. From that date, suppliers will be able to

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sell unleaded petrol, if they see a commercial opportunity for it. This paper considers, in particular, issues raised by Articles 3, 13 and 14. In very broad terms, these issues are to do with, first, the availability of unleaded petrol; and, secondly, its use.

I INTRODUCTION

Background to the Directive

4. In recent years there has been growing public concern about the effects that lead may have on human health and the environment. The subject was reviewed in the Ninth Report of the Royal Commission on Environmental Pollution ('Lead in the Environment', Cmnd 8852 HMSO 1983) which declared an overriding concern to reduce the amount of lead dispersed in the environment by man. In its response (Pollution Paper 19, HMSO 1983) the Government accepted that it was prudent to reduce exposure to lead from all sources. The Royal Commission considered that lead emitted to the atmosphere from petrol engines currently accounts for up to 20% of the body burden of lead in most adults. This situation should show some improvement when low lead petrol (ie at 0.15g/l) comes on sale at the beginning of next year. Even then lead from vehicle emissions is likely to remain the largest single readily controllable source of environmental lead.

5. The Government believed that the Royal Commission's target date of 1990 for the introduction of unleaded petrol throughout the EC was a reasonable one to aim at - and improve upon if possible. As a result of a UK initiative in 1983 strongly supported by the Governments of the Federal Republic of Germany, the Netherlands and Denmark, EC Directive 85/210/EEC was agreed in March 1985 which required a balanced distribution of unleaded petrol throughout the Community by October 1989. The Directive also requires Member States to take appropriate measures to encourage the uptake of unleaded petrol.

6. The need for these additional provisions arises, first, from the incompatability of unleaded petrol with many of the engines in the present car fleet, as the use of unleaded petrol in cars designed for running on leaded petrol could cause severe mechanical damage to the engine; and secondly from the fact that unleaded petrol will probably be more expensive than leaded petrol to produce and distribute.

Unleaded Petrol

7. Previous reductions in the permitted lead content of petrol have required only changes in refinery practice. The fuel supplied to the garage forecourt has remained fully compatible with the needs of the existing car fleet. The quantity of lead additive permitted has hitherto always been sufficient to lubricate the valves of those engines which do not have hardened valve seats, and the octane numbers* of the "premium" (ie 4-star) petrol have remained unchanged. (This situation will not alter with the reduction of the lead content of petrol from 0.4 to 0.15 grams per litre on 1 January 1986 - see paragraph 3 above).

8. In accordance with Article 4 of the Directive, "premium" unleaded petrol is to have an octane rating of 95 RON/85 MON, between 3-star and 4-star petrol. Refining to a higher octane would be very expensive. (Article 4 also allows a lower octane "regular" grade to be sold in additon to "premium" unleaded, and such a grade is defined in the new British Standard). Some cars now on the roads designed to run on leaded 4-star petrol (97 RON, 86 MON) can be retuned by a qualified car mechanic to run on the new unleaded "premium", but many cannot use it either because their scope for retuning is too limited or they lack the necessary hardened valve seats. However there are a number of cars already on the road that are designed to run on unleaded regular grade petrol. These could run on a premium unleaded grade with no ill effect.

9. Therefore, unlike earlier changes in the lead content of petrol, there will need to be a long transition period during which both leaded and unleaded petrols are available from garages.

The Transition Period

10. This transition period is likely to last into the next century before leaded petrol on garage forecourts is fully phased out through lack of demand. From then on it will be available only through specialist suppliers for those cars, and for motorbikes, lawn mowers, power tools etc. that will be unable to use unleaded petrol. During the transition period, however, the owner of a car designed and tuned to run on the new unleaded petrol could equally well use the higher octane 4-star leaded petrol without damage to the car's engine. For this reason Article 13 of the Directive requires Member States to take appropriate measures to ensure as far as possible that leaded petrol is not used in motor vehicles designed to run on unleaded petrol.

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* Octane numbers form a scale which refers to the degree to which petrol can resist knock (premature spontaneous ignition of the fuel mixture in the engine cylinder).
Research Octane Number (RON) defines the petrol's ability to resist low speed, audible knock.
Motor Octane Number (MON) defines the petrol's ability to resist high speed knock, which may not be audible above the general level of engine noise.

The Costs of Leaded and Unleaded Petrol

11. One special difficulty in avoiding significant "misfuelling" is that the cost of unleaded premium petrol could be higher than that of 4-star premium petrol over at least the early part of the transition period.

12. Because lead is primarily added to petrol to boost octane, its removal will mean that unleaded petrol, even though only at 95 RON, will have been refined further than the petrol used in premium leaded petrol. This is likely to increase the manufacturing cost of unleaded petrol by around ½ - 1½ pence per gallon. To that cost has to be added the additional capital costs at the refinery and the extra distribution and forecourt costs of an additional grade of petrol. It is estimated that unleaded petrol could cost in total between 1½ to 4p per gallon more than 4-star petrol. As far as prices at the forecourt are concerned, this is a more difficult matter to predict, as prices charged by individual suppliers will not necessarily directly reflect changes in cost to them.

Cars to Run on Unleaded Petrol

13. A small proportion of the existing car fleet is already capable of running safely on premium unleaded petrol. Article 14 of the Directive invites Member States to promote the use of unleaded petrol in such vehicles. It would, however, be counter productive if such promotion resulted in misfuelling of cars unsuitable for use with unleaded petrol. The major growth in the use of unleaded petrol must come from new cars designed and tuned to run on it.

14. The growth rate in the number of cars in the UK able to run on unleaded petrol is at present difficult to judge. The Government would only be able to prohibit the sale of new cars which cannot run on unleaded petrol within the framework of an EC Directive; and the existing Directive governing vehicle type approval does not permit the UK to require new cars to run on unleaded petrol. This requirement, and the timescale over which it can be imposed, is presently part of the wider negotiations now underway in the Community on a new Directive on vehicle exhaust emissions. Although their detailed plans will naturally reflect the outcome of those negotiations, as 1989 approaches car manufacturers can be expected increasingly to ensure that their new cars are capable of running on unleaded petrol.

II THE BALANCED DISTRIBUTION OF UNLEADED PETROL FROM 1 OCTOBER 1989

15. Article 3 of Directive 85/210/EEC requires Member States to ensure the availability and balanced distribution of unleaded petrol from 1 October 1989.

16. Oil companies in the past have well demonstrated their ability to invest in the development of new fuel markets. The growing diesel car market, for example, has been a helpful if small, contribution to the displacement of leaded fuel. For its part the Government has taken the first steps towards making it possible to sell unleaded petrol in the UK - see paragraph 3.

17. The complexities of the transition period, however, may mean that further action by the Government will be necessary to ensure that the requirements of Article 3 are met.

Q1. As far as the motorist is concerned, what do you think would constitute a reasonable, effective, country-wide network of filling stations selling unleaded petrol at the beginning of the transition period?

Q2. Do you consider that market conditions could be such as to guarantee this availability and balanced distribution?

18. If it seems unlikely that the market will be able to meet the requirements of Article 3, the Government will need to consider what requirements would need to be placed on retailers to supply unleaded petrol.

Q3. Should the larger garages be required to sell unleaded petrol from 1 October 1989, leaving the smaller garage to introduce unleaded petrol when they judge it in their interest to do so?

Q4. If so, what should be the criteria for defining which garages would be required to sell unleaded petrol, and should the criteria be revised as the market for unleaded petrol grows?

19. Some garages, particularly smaller ones and those with limited storage and pump facilities, might well find it difficult to provide a new fuel in addition to those already being sold, and might therefore cease to make 2-star leaded petrol available as the market for unleaded petrol develops.

III USE OF UNLEADED PETROL

20. Article 13 of Directive 85/210/EEC, requires Member States to take appropriate action to ensure as far as possible that leaded petrol is not used in motor vehicles designed to run on unleaded petrol. In other countries where unleaded petrol has been introduced action has ranged from measures directed at the relative price of leaded and unleaded fuels, to physical and legal restrictions on its use.

Pricing

21. If a need were seen to encourage the sale of unleaded petrol through some form of pricing, a judgement would need to be made about unleaded petrol prices relative to those of 4-star, 3-star and 2-star grades of leaded. It will also be very important to ensure that there is no incentive in the opposite direction - ie that might result in motorists whose cars need leaded petrol, possibly of a certain minimum octane, buying unleaded.

22. Options include the fixing of prices; or the use of differential rates of Excise Duty. One possibility would be to seek a voluntary agreement with industry which would leave the business of ensuring a significant uptake of the new fuel to the oil companies and the distributors. A number of factors would have to be taken into account including the high level of competition; the existence of restrictive practice legislation in the UK and overseas anti-trust legislation; and the variation in sources of supply (eg dedicated refineries or the Rotterdam spot market).

Q5. What legal obstacles might rule out a voluntary agreement in the UK? What are your views on the likely success of such an agreement?

23. If a voluntary agreement on pricing is not practical, it would be necessary to consider what action the Government might take. One possibility would be to remove any price disadvantage of unleaded petrol through the use of controls on their relative prices.

Q6. What do you consider would be the effects of price regulation in the UK, assuming that the relative, not absolute, prices of the two fuels are regulated?

24. The tax system offers a less direct way of influencing the relative price of the two fuels. Decisions on tax levels are, of course, a matter for the Chancellor of the Exchequer's overriding discretion, in the light of his Budget

judgement. Subject to that, it would be possible to introduce differential rates on leaded and unleaded petrol so that the naturally lower price of the former was offset by higher taxation. This approach would have to recognise though that relative prices at the pump would not necessarily reflect the full extent of the duty differential, and could vary from one forecourt to another.

Q7. What are your views on the differential taxation of leaded and unleaded petrol?

Q8. Are there any other measures the Government could take to provide fiscal compensation that you think should be considered (consistent with the conditions of Article 14)?

Physical measures

25. Several countries have introduced requirements for special filler nozzles on petrol pump hoses to reduce misfuelling. The filler nozzles for unleaded petrol are narrower, as are the car petrol tank filler pipes. This means that it is not possible accidentally to put leaded petrol in a car intended to run on unleaded petrol. Abroad this is important to protect certain other vehicle emission control devices that are sensitive to lead. In this country the special nozzles could act as an aid to the recognition of pumps selling unleaded petrol, and might be useful to allow visitors' cars from abroad with narrow tank filler pipes to re-fuel.

26. Requiring narrow tank filler pipes on cars, in addition to narrower nozzles on petrol pumps, has been employed in some countries such as the USA. It is unlikely to be a practical measure, however, until motorists can be sure of finding unleaded petrol at virtually all petrol stations throughout the country; and abroad where tourists take their cars. The power of Member States to impose the requirement must depend on EC type approval laws.

Q9. What are your views on the use of special filler nozzles to deliver unleaded petrol?

27. It seems likely that the most important aid for motorists to the ready identification of the correct fuel for their vehicle is adequate labelling, on the pumps and perhaps on the vehicle itself. The BSI standard for unleaded petrol which will be published later this year, has the requirement that pumps selling unleaded petrol shall be clearly marked with a label with the words "UNLEADED PREMIUM (or REGULAR as appropriate) BS 7070". The size of the lettering is also defined. But further information may also be useful - in, for instance, motorway signs for service stations.

Q10. Have you views or suggestions on this or any other proposals for additional labelling or identification?

28. It is obviously essential that the motorist should know whether the car he is driving is able to run on unleaded petrol. This information could be given clearly in the owner's manual. It might also be provided on garage forecourts - as, at present, recommended tyre pressures are listed for each car model.

Q11. What steps do you think necessary to ensure that a motorist is properly informed as to the capability of his car to run on unleaded petrol?

29. In some countries there is legislation to prohibit misfuelling, either by the driver or by the forecourt attendant; but there is evidence that such measures have not been entirely effective. In any event, the object has been to prevent damage, by misfuelling, to the catalyst required to be fitted to the vehicle exhaust - causing the car to contravene exhaust emission regulations. As far as the UK is concerned, the Government have no intention of setting new emission standards which would require the fitting of three way catalytic converter technology. The proposed EC Directive on vehicle emissions is expected to permit the imposition of new standards in the 1990s which might necessitate the use of the simpler oxidation catalytic converter technology on some cars; but the Government have no specific plans at present for standards that would require the use of oxidation catalysts.

Conclusions

30. It may well be that no single one of these measures would be enough to ensure that the particular objectives of Articles 3, 13 and 14 of the Directive are met adequately.

Q12. What combination of the measures outlined above do you consider would meet the objectives of Articles 3, 13 and 14?

Central Directorate of Environmental Protection
Department of the Environment

October 1985

II

(Acts whose publication is not obligatory)

COUNCIL

COUNCIL DIRECTIVE

of 20 March 1985

on the approximation of the laws of the Member States concerning the lead content of petrol

(85/210/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 thereof,

Having regard to the proposal from the Commission (¹),

Having regard to the opinion of the European Parliament (²),

Having regard to the opinion of the Economic and Social Committee (³),

Whereas the protection and improvement of public health and of the environment are at present, and will in the future be, one of the items of major concern for all industrialized countries; whereas the effects on public health and the environment of pollution caused by substances emitted in the exhaust gas of vehicles must be regarded as serious owing to the continuous increase in the volume of motor vehicle traffic;

Whereas Council Directive 78/611/EEC of 29 June 1978 on the approximation of the laws of the Member States concerning the lead content of petrol (⁴) fixed a maximum value for the permitted lead-compound content of petrol of between 0,40 and 0,15 g/l;

Whereas the third action programme on the environment, the general approach of which was approved in the resolution of 7 February 1983 (⁵) by the Council and the representatives of the governments of the Member States meeting within the Council, provides for further efforts to reduce considerably the present levels of exhaust pollution;

Whereas existing or future disparities in the national laws of the Member States concerning the composition of petrol and in particular the rules governing the limitations on the lead content and on the benzene content of motor vehicle petrol may directly affect the functioning of the common market;

Whereas refining technology allows for a lowering of the lead content of leaded petrol to 0,15 g Pb/l without adverse effects on the quality of petrol;

Whereas the reduction and, ultimately, the elimination of lead in petrol will improve the health protection of the population, particularly in areas with dense traffic; whereas the early introduction of unleaded petrol is also desirable to permit, where appropriate, the application of certain anti-pollution technologies for drastically reducing polluting emissions from motor vehicles, in particular nitrogen oxides and unburned hydrocarbons;

Whereas for a certain time leaded petrol must continue to be available on Member States' markets alongside unleaded petrol, in order to satisfy, given the prevailing economic and technical conditions, the requirements of a large proportion of the existing vehicle fleet;

(¹) OJ No C 178, 6. 7. 1984, p. 5.
(²) OJ No C 12, 14. 1. 1985, p. 56.
(³) OJ No C 25, 28. 1. 1985, p. 46.
(⁴) OJ No L 197, 20. 7. 1978, p. 19.
(⁵) OJ No C 46, 17. 2. 1983, p. 1.

Whereas, owing to the importance of preventive measures against adverse effects on public health and the environment, Member States should be enabled to introduce unleaded petrol on to their markets before the compulsory date laid down for the Community as a whole;

Whereas the protection of public health also requires a limitation on the benzene content of petrol;

Whereas the quality of unleaded 'premium' petrol in terms of minimum research and motor octane numbers should be guaranteed in order to ensure satisfactory operation throughout the Community of motor vehicles designed to be fuelled by such petrol;

Whereas it should be possible to market another unleaded 'regular' petrol with lower octane ratings;

Whereas lead is only an additive to petrol; whereas the reduction or elimination of lead must not have the effect of significantly increasing other pollutants contained in the exhaust gases of motor vehicles as a consequence of modifications in the composition of petrol;

Whereas the reduction of lead content and the introduction of unleaded petrol at a given date must in no way affect the free circulation, or the putting on the market, of petrol within the Community;

Whereas a regular check at the final distribution stage, on the lead and benzene content of petrol is required to ensure that consumers receive the appropriate type of petrol;

Whereas a certain proportion of the existing motor vehicle fleet could run on unleaded petrol; whereas the Member States should therefore be requested to take all appropriate measures compatible with the Treaty to promote the widest possible use of unleaded petrol;

Whereas further examination of some aspects of the measures taken to reduce the concentrations of lead or other polluting substitutes in the atmosphere should be continued at Community level; whereas Member States should, where appropriate, provide the Commission with all relevant information;

Whereas the subsequent development of reference methods for measuring the lead and benzene content of petrol and for calculating octane ratings referred to in this Directive may be desirable in the light of scientific and technical progress in this area; whereas, in order to facilitate implementation of the work necessary to this end, a procedure should be set up to establish close cooperation between the Member States and the Commission within a Committee on Adaptation to Scientific and Technical Progress;

Whereas, by reason of their geographical position and the possible consequences for their oil markets of applying this Directive, the French overseas departments should be excluded from its scope,

HAS ADOPTED THIS DIRECTIVE:

Article 1

For the purposes of this Directive:

(a) 'petrol' shall mean any volatile mineral oil intended for the operation of internal combustion spark-ignited engines used for the propulsion of vehicles;

(b) 'unleaded petrol' shall mean any petrol the contamination of which by lead compounds calculated in terms of lead, does not exceed 0,013 g Pb/l;

(c) 'leaded petrol' shall mean all petrol other than unleaded petrol. This shall have a maximum permitted lead-compound content, calculated in terms of lead, of not more than 0,40 g Pb/l and not less than 0,15 g Pb/l.

Article 2

1. As from the entry into force of this Directive, and subject to paragraph 2, Member States shall continue to ensure the availability and balanced distribution of leaded petrol within their territories.

2. If, as the result of a sudden change in the supply of crude oil or petroleum products, it becomes difficult for a Member State to apply the limit on the maximum lead content of leaded petrol, that Member State may, after having informed the Commission, authorize a higher limit within its territory for a period of four months. The Council, acting by a qualified majority on a proposal from the Commission, may extend this period.

3. Member States shall, as soon as they consider it appropriate, reduce to 0,15 g Pb/l the permitted lead-compound content, calculated in terms of lead, of leaded petrol put on their markets.

Article 3

1. Subject to paragraphs 2 and 3, Member States shall take the necessary measures to ensure the availability and balanced distribution within their territories of unleaded petrol from 1 October 1989.

The first subparagraph shall not preclude measures being taken to introduce unleaded petrol on the market of a Member State from a date earlier than 1 October 1989.

2. Member States may, with the Commission's agreement, derogate from the first subparagraph of paragraph 1 for a period of four months if, as a result of a sudden change in the supply of crude oil or petroleum products, it becomes impossible to meet the demand for unleaded petrol of the quality specified in Article 5 (1). However, every effort must be made to maintain a minimum distribution network for unleaded petrol. The period of four months may be extended by the Council acting by a qualified majority on a proposal from the Commission.

3. Until 1 April 1990, Member States may, by way of derogation, allow the contamination of unleaded petrol by lead compounds to exceed 0,013 g Pb/l provided it does not exceed 0,020 g Pb/l. Until that date, all pumps carrying unleaded petrol should be clearly labelled to show that the lead content does not exceed either 0,020 or 0,013 g Pb/l, together with any appropriate supplementary advice.

Article 4

From 1 October 1989 the benzene content of leaded petrol and of unleaded petrol shall not exceed 5,0 % by volume.

Where recourse is had to the second subparagraph of Article 3 (1), this benzene limit shall apply to unleaded petrol from the date chosen at national level for the earlier introduction of such petrol.

Article 5

1. Subject to paragraph 2, unleaded petrol made available pursuant to Article 3 of this Directive shall have a minimum motor octane number (MON) of 85,0 and a minimum research octane number (RON) of 95,0 at the pump ('premium').

2. Paragraph 1 shall not preclude the introduction on to the market of a Member State of another unleaded petrol with lower octane numbers than those provided for in paragraph 1 ('regular').

Article 6

Member States shall take all appropriate steps to ensure that neither the reduction of the lead content of petrol nor the introduction of unleaded petrol causes a significant increase in the quality and/or quantity of pollutants in the gases emitted from motor vehicles.

Article 7

1. Subject to paragraph 2, Member States shall not prevent or restrict, on grounds of lead or benzene content, the free circulation and marketing of petrol which complies with this Directive.

2. When a Member State applies Article 2 (3), the maximum permitted lead content of leaded petrol placed on its market shall be fixed at 0,15 g Pb/l.

Article 8

1. Member States shall take appropriate measures to ensure compliance, at the final distribution stage, with the provisions relating to the maximum lead and benzene content of petrol, and to the quality of petrol as regards octane rating.

2. Where a Member State establishes that petrol fails to comply with Articles 1, 2, 4 and 5 it shall without undue delay take the necessary measures to ensure compliance with those provisions.

Article 9

1. The lead content of petrol shall be established in accordance with the procedures set out in section I of the Annex.

2. The benzene content of leaded and unleaded petrol shall be established in accordance with the procedure set out in Section II of the Annex.

3. The octane ratings (MON and RON) of unleaded petrol shall be determined in accordance with the procedure set out in Section III of the Annex.

Article 10

The procedures laid down in Articles 11 and 12 for the adaptation of this Directive to technical progress shall cover the subsequent development of the reference methods of analysis referred to in the Annex, taking into account in particular other equivalent methods.

Such adaptation must not result in any direct or indirect modification of the limit values laid down in this Directive.

Article 11

1. For the purposes of applying Article 10, a Committee on the adaptation of this Directive to scientific and technical progress, hereinafter called 'the Committee', shall be set up ; it shall consist of representatives of the Member States, with a Commission representative as chairman.

2. The Committee shall adopt its own rules of procedure.

Article 12

1. Where the procedure laid down in this Article is invoked, the Committee shall be convened by the chairman, either on his own initiative or at the request of the representative of a Member State.

2. The Commission representative shall submit a draft of the measures to be taken to the Committee. The Committee shall give its opinion on the draft within a time limit set by the chairman having regard to the urgency of the matter. Decisions shall be taken by a majority of 45 votes, the votes of the Member States being weighted as provided in Article 148 (2) of the Treaty. The chairman shall not vote.

3. The Commission shall adopt the proposed measures if they are consistent with the opinion of the Committee,

Where the proposed measures are not consistent with the opinion of the Committee, or if no opinion is delivered, the Commission shall without delay submit to the Council a proposal on the measures to be taken. The Council shall decide by a qualified majority.

If, within three months of the proposal being submitted to it, the Council has not acted, the proposed measures shall be adopted by the Commission.

Article 13

Member States shall take appropriate measures to ensure as far as possible that leaded petrol is not used in motor vehicles designed to run on unleaded petrol.

Article 14

Member States are invited, for the purpose of applying Article 3, to promote the widest possible use of unleaded petrol in all existing vehicles capable of running on such fuel. To that end, they are invited to take such measures as they consider appropriate which are compatible with the Treaty.

Article 15

1. Member States shall supply the Commission, as early as possible, with information on:

- — the date of introduction of unleaded petrol on the market in accordance with Article 3,
- — the measures envisaged pursuant to Article 14.

2. At the request of the Commission, Member States shall supply:

(a) information which they have available on the annual quantities of leaded and unleaded petrol supplied to the internal Community market;

(b) a summary of the results of the measures taken in accordance with Article 8 (1);

(c) information which they have available on the effects on the application of this Directive, and in particular Article 6, on:

- — the development of the concentrations of lead and polluting substitutes in the atmosphere,
- — energy policy, in particular in the refinery and distribution sector.

Article 16

1. Member States shall take the measures necessary to comply with this Directive at the latest on 1 January 1986. They shall forthwith inform the Commission thereof.

2. Member States shall ensure that they communicate to the Commission the texts of the provisions of national law which they adopt in the field governed by this Directive.

Article 17

Directive 78/611/EEC shall cease to be applicable on 31 December 1985.

Article 18

This Directive shall not apply to the French overseas departments.

Article 19

This Directive is addressed to the Member States.

Done at Brussels, 20 March 1985.

For the Council

The President

A. BIONDI

ANNEX

REFERENCE METHODS

As regards the reference methods, the versions in the various languages published by ISO and ASTM respectively shall be authentic, as shall other language versions which the Commission certifies as conforming to them.

I. Reference method for measuring the lead content of petrol

A. *Leaded petrol*

For the measurement of the lead content of petrol, the reference method shall be that laid down in ISO 3830 (edition approved in 1981).

B. *Unleaded petrol*

For the measurement of the trace lead content of petrol, the reference method shall be that laid down in ASTM D. 3237 (approved edition dated 31 August 1979) using atomic absorption spectrometry.

II. Reference method for measuring the benzene content of petrol

For the measurement of the benzene content of petrol, the reference method shall be that laid down in ASTM D. 2267 (edition approved in 1978) using gas chromatographic determination with polar column and internal standard.

III. Reference methods for the determination of octane ratings

The octane ratings (motor octane number and research octane number) shall be determined by the methods described in ISO 5164 and ISO 5163 respectively (editions approved in 1977).

IV. Interpretation of results

The results of individual measurements shall be interpreted on the basis of the method described in ISO 4259 (published in 1979).